

REMARKS

Claims 8-10 are pending in this application. By this Amendment, claims 8-10 are added. The added claims introduce no new matter. Claims 2-7 are canceled without prejudice to, or disclaimer of, the subject matter recited in those claims. Reconsideration of the application based on the above amendments and the following remarks is respectfully requested.

Applicants appreciate the courtesies shown to Applicants' representative by Examiners Pilkington and Fenstermacher during the July 18, 2007 personal interview. Applicants' separate record of a summary of the substance of the personal interview is contained in the following remarks.

The Office Action, in paragraph 2, rejects claims 2-7 under 35 U.S.C. §103(a) as being unpatentable over JP-U-4-115592 to Takagi. This rejection is respectfully traversed.

The Office Action, in paragraph 2, concedes that Takagi does not disclose the specific arrangement of links and ordering of the diagonal and coaxial joints variously recited in now-canceled claims 3 and 4. Claim 8 recites similar features. To cure this deficiency, the Office Action asserts that it would have been obvious to one of ordinary skill in the art to arrange the links and joints in the order recited in claims 3 and 4 allegedly because such order is a mere rearrangement of parts and would only have involved routine skill in the art. The analysis of the Office Action fails for at least the following reasons.

One of ordinary skill in the art would not have been motivated to modify the structure of Takagi to render obvious the specifically recited arrangement and combination of features recited in claim 8. MPEP §2144.04 states "if the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection."

Regarding the rearrangement of parts, MPEP §2144.04 (VI) provides the following guidance, "[t]he mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device." *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984). In *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950), claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device. See also *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). The facts of *Japikse*, however, do not match those of the current rejection. In particular, the specific arrangement and combination of features recited in claim 8 would have modified the operation of the Takagi device.

The subject matter of the pending claims is directed to an articulated manipulator with six links and six degrees of freedom that allows for a terminal part of an arm assembly to be positioned at a predetermined position and a predetermined orientation relative to the base part. Claim 8 recites, among other features, the first link is connected to a base by the first coaxial joint for rotation about a rotation on an axis coaxial with an axis of the first link; the first link and the second link are connected to each other by the first diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the first axis of the first link; the second link and the third link are connected to each other by the second diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the axis of the second link, the rotation axis being parallel to the rotation axis of the first and second links; the third and the fourth link are connected to each other by the third diagonal

joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the axis of the third link, the rotation axis being perpendicular to the rotation axis of the second and third links; the fourth link and the fifth link are connected to each other by the second coaxial joint for rotation about a rotation axis coaxial with the axis of the fourth link; and the fifth link and the sixth link are connected to each other by the fourth diagonal joint for rotation about a rotation axis inclined at an angle of 45 degrees relative to the axis of the fifth link. At least because the second to the fourth links are connected according to the features recited in claim 8, a U-shaped structure is permitted from this combination and maximizes the operational space in which the terminal part of the sixth link is able to move. Additionally, at least because the fourth link and the fifth link are connected by a second coaxial joint, only the fifth and the sixth links need to be moved to change the orientation of the sixth link with respect to the first and the second axis. This allows the sixth link to be set at a desired position in a desired orientation without turning the first to the fourth links of the side of the base through large angles.

Further, with reference to Fig. 3, the specific combination of features recited in claim 8 creates a triaxial intersection point among the rotational axis of the coaxial joint between the fourth and fifth links, the diagonal link between the fifth and sixth link, and the terminal portion of the sixth link. For example, the axis, or the line perpendicular to the lines indicating the joints in Fig. 3, intersect at a common point. This triaxial intersection point allows the terminal device to move along a predetermined channel and solves the problem, as indicated in Applicants' disclosure, of needing to determine inverse conversions for calculation of rotational angles of links based on the position and orientation of a terminal device. Modifying Takagi in the manner suggested by the Office Action would have also modified the operation of the Takagi device at least because Takagi cannot achieve the U-Shape orientation and because Takagi lacks the triaxial intersection point. For example, an

examination of Fig. 5 of Takagi reveals that the axes of any alleged fourth, fifth and sixth links do not share a common triaxial intersection point. Thus, Takagi cannot achieve the benefit of the sixth link being set at a desired position in a desired orientation. As such, it is unreasonable to assert that the specific arrangement and combination of features recited in claim 8 could have been arrived at through mere rearrangement of the parts disclosed in Takagi under the precedent of *Japikse*, or any other identified precedent.

Further, Applicants have demonstrated the criticality of specific features recited in claim 8. In particular, for the reasons discussed above, and argued during the July 18 personal interview, the combination of features recited in claim 8 allow for larger work angle and unexpected control of the positioning and orientation of the terminal portion of the sixth link. Based on at least this evidence of criticality, MPEP §2144.04 is inapplicable.

During the July 18 personal interview, agreement was not reached regarding the non-obviousness of the features recited in now-canceled claims 3 and 4.

For at least the foregoing reasons, the applied reference cannot reasonably be considered to have suggested the combination of all the features positively recited in independent claim 8. Additionally, claims 9 and 10 are not taught, nor would they have been suggested, by the applied reference for at least the respective dependence of these claims, directly or indirectly, on an allowable base claim, as well as for the separately patentable subject matter that each of these claims recites.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of claims 8-10 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:CJW/clf

Attachments:

Petition for Extension of Time

Date: November 1, 2007

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